American Journal of Pharmacy

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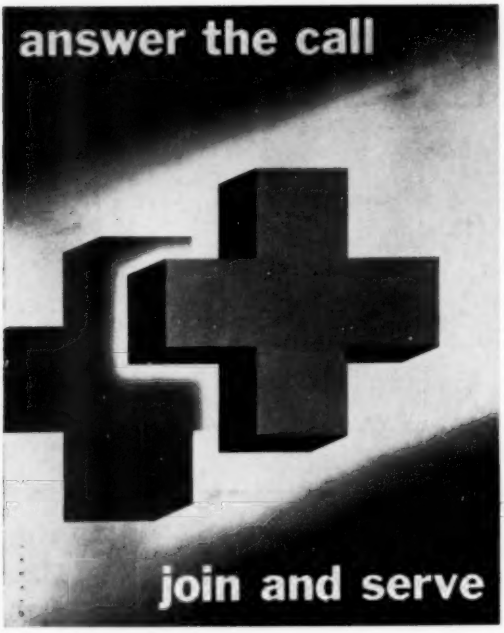

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AMERICAN JOURNAL OF PHARMACY

AND THE SCIENCES SUPPORTING PUBLIC HEALTH

Since 1825

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EDITORIAL

VETERINARY PHARMACEUTICALS

MANY pharmacists fail to recognize the opportunities for professional service and sales offered by animal health products. There was a time when pets and farm animals were given little or no medical care for it was generally believed that they possessed some remarkable nature-given, self-healing powers unknown to man. We know now that animals, like man, are subject to a myriad of diseases which can be prevented or controlled by proper therapy. While many of the most troublesome diseases afflicting animals are specific for a certain species, in some instances they are found in many different animals and may even be acquired by man.

Some domestic food animals are particularly sensitive to certain diseases which spread like wildfire through the entire herd or flock. The methods used today in raising such animals confine them in close quarters making the rapid transmission of disease inevitable. For example, the pen raising of turkeys would be impossible were it not for the use of a large array of drugs. On the other hand, turkeys raised on the range fare quite well if they are widely spread out. This matches quite closely human experience wherein a high population density is correlated with a high rate of disease unless preventive measures are taken. And yet with animals and poultry space does not permit other than pen raising in most instances. The enterprise is profitable then only if disease is controlled.

In the love and devotion given to our pets most Americans go almost, if not entirely, beyond all reason. Thousands of dogs and cats in the United States have a much finer home and a better diet than that enjoyed by millions of the earth's people. The diet of pets is of such great moment that radio and television time is taken, at great expense, to advertise dog and cat foods. Many of these contain all the vitamins and minerals plus special flavors to tempt their jaded appetites.

When people are so concerned with their pets' welfare as to buy special foods, it is obvious that no medication, regardless of cost, will be denied them if it is needed.

Pharmacists, by and large, have not sensed the need for expert guidance in the selection and use of drugs for the treatment of pets or other animals. The terminology and etiology of animal diseases are a strange jargon of lay terms and scientific language, even as used by many veterinarians, and an understanding of human diseases does not help much in deciphering it. On the other hand the therapeutic approaches used are almost identical: vaccines, sulfonamides, antibiotics, anthelmintics, etc. It does not take long for the intelligent and interested pharmacist to acquire some familiarity with veterinary remedies and the diseases for which they are used. This knowledge often pays great dividends and opens up an area of sales of no small volume.

Some may argue that the treatment of animals by their owners is dangerous and improper. To this we, "Ask dangerous to whom?" Surely not the owner, except possibly where certain vaccines are used. Insofar as the animal is concerned, the owner has the unchallenged right to kill it if he so wishes. Why not then the right to treat it for some disease?

There is a great difference between the distribution of drugs for human use and those for use solely in animals. To put them on the same level of federal and state control would be tantamount to placing man and beast on the same footing before the law. This might lead to having animals own property, suing their predators and even having the power of the franchise, providing they were twenty-one and could pass a literacy test.

L. F. Tice

THE COLLOIDAL DEMULCENTS. I. PHYSICAL AND CHEMICAL PROPERTIES

By A. J. MonteBovi *

RECENT years have seen a broader interest in the use of colloidal adsorbents for the management of certain dermatoses. The empirical use of these agents has developed through the years, to include oat-meal, starch, vegetable gums, and soaps. It is surprising to note that the literature contains but few reports (1) concerning clinical data, and studies of the chemical and pharmaceutical properties of these agents as they concern their dermatologic uses are conspicuous by their absence.

While many agents may be classed as colloidal adsorbents, we concerned ourselves only with those agents currently used in dermatology for these characteristics. This class of preparations are divided into 2 broad groupings—the vegetable meals and the purified derivatives (gums, proteins and starches). Examples of the former group are corn-meal and oat-meal and of the latter, tragacanth, gelatin and casein, and corn starch. The chemical analysis of these agents are reported in Table I. The purified materials were of U. S. P. grade while the vegetable meals were of the usual commercial grade.

TABLE I

ANALYSIS OF THE COLLOIDAL ADSORBENTS (IN %)

Agent	*Carbohydrate*	*Oil*	*Protein*	*Crude Fiber*	*Moisture*
Corn Starch	87	0.2	0.5	Negligible	12.0
Corn Meal	78	1.1	7.4	"	12.0
Whole Oat Meal	68.2	7.4	14.2	1.3	8.0
Colloidal Oat Meal [a]	46	9.0	24.0	0.03	8.0
Albumin Casein Gelatin Acacia Tragacanth Dextrin Sodium Oleate	C. P. or U. S. P. Grade				

* Professor, St. John's University, College of Pharmacy, Brooklyn, N. Y.

[a] The Colloidal Oat Meal used was AVEENO. This is a specifically milled constant fraction of the colloid producing portion of the oat grain.

Gold Number (2) (Zsigmondy). Hydrophilic solutions differ in protective ability. A convenient basis for the determination of such protective ability is the "Gold Number" which actually is the milligrams of hydrophilic colloid which just fails to prevent the change from red to blue (due to aggregation) in 10 cc. of a Gold Solution when 1 cc. of 10 per cent solution of Sodium Chloride is added. Table II shows that different hydrophilic colloids exhibit very different protective action, with gelatin showing the highest activity in this respect.

TABLE II

THE GOLD NUMBERS OF THE COLLOIDAL AGENTS

Gelatin	0.0005 — 0.01
Casein	0.01 — 0.05
Colloidal Oat Meal (Aveeno)	0.075 — 0.5
Albumin (Egg)	0.1 —
Acacia	0.15 — 0.5
Soap (Sod. Oleate)	0.4 — 1.0
Tragacanth	2.0
Dextrin	5.0
Starch (Potato)	25.0

The smaller the "Gold Number" the higher the protective ability of the preparation. The range in values was from 0.0005 to 25. It was surprising to note that starch which is widely used as a protective colloidal adsorbent showed the least protective ability while gelatin which is rarely used demonstrated the highest value. Aveeno Colloidal Oat-Meal, (a new addition to this class of preparations) exhibited a high order of protective ability. Generally, a correlation between the protein content and protective action could be shown although this is not clear-cut nor consistent throughout this sampling of materials. Using an arbitrary index of 0.5 as a comparative value, the non-protein agents were all above this level while the protein-containing preparations were below this value.

In order to evaluate the concentration of dialyzable material present in the different colloids, a 2 to 5% dispersion of the test agents was dialyzed through a Will #10886 Membrane at 25° C. against distilled water. A range in values from 0.031% to 0.15% of dialyzable material was found for the test agents, except for sodium oleate which was expected to have a high dialyzing index. The upper range for the test series was observed for the vegetable meals and apparently

consisted of inorganic salts. The low concentration of dialyzable material is consistent with the colloidal nature of the agents. Of the vegetable meals, colloidal oat-meal had the least amount of dialyzable material and was perhaps more consistent with the properties of the purified materials.

A valuable property of these agents is their ability to spread evenly on the skin. The spreading characteristics could be compared on the basis of their surface tension. The surface tension of the different test agents in from 1 to 5% concentration, was measured with the Cenco De Nouy Tensiometer. A range of from 48.5 to 40.2 dynes/cm^2 was found for colloidal oat-meal; 54 to 43 dynes/cm^2 were observed for the gums and soap. The protein solutions generally ranged about 60 dynes/cm^2. Soap showed the lowest surface tension of the series; starch solution ranged among the highest.

It is difficult to properly assess the role of surface tension in the over-all dermatologic properties of these agents. While the lowered surface tension might be predisposed toward a degreasing action, this property has not been observed with the colloidal oat-meal. Starch, with a relatively high surface tension, frequently leaves the skin "dry". This physical characteristic probably contributes to the more intimate contact between the colloidal adsorbent and the skin.

The viscosity of the different solutions was determined in the usual way with the Ostwald tube and from this data the relative viscosity calculated. As would be expected, the viscosity increased with concentration. Except for the starch and soap solution, the preparations showed a high viscosity within this range, and the corn and oat-meals approached that of a gel. The viscosimetric values of colloidal oat-meal are perhaps typical of the curves observed with these agents.

TABLE III

VISCOSITY OF COLLOIDAL OAT-MEAL (AVEENO)

	Standard	Time (Seconds)				
Temp. C.	Water	1%	2%	3%	4%	5%
25	13.0	56.3	93.2	334.1	726.5	1160.2
35	9.4	41.4	69.4	154.4	433.8	774.1
45	7.8	30.8	53.6	98.2	321.6	620.1
55	6.5	25.5	43.3	95.3	275.4	492.4
65	5.4	21.4	36.4	79.8	215.3	432.8
75	4.9	18.6	31.2	69.7	185.1	328.7

RELATIVE VISCOSITY *

	Relative Viscosity				
Temp. C.	1%	2%	3%	4%	5%
25	4.3	7.4	25.6	55.8	89.2
35	4.2	7.3	16.3	46.0	89.2
45	3.9	6.8	14.7	41.1	79.3
55	3.8	6.6	14.5	40.2	77.1
65	3.7	6.4	14.1	38.5	75.5
75	3.5	6.3	14.0	37.7	75.1

* Ratio of Viscosity of sample to viscosity of water at the same temperature.

Discussion

The colloidal adsorbents are used in dermatology primarily for their protective demulcent effects. On the basis of the physical properties of the agents commonly used for this purpose, the role of colloidal oat-meal appears to be well founded. Chemically it is made up of gums, protein and oil in a ratio which is consistent with the desirable characteristics of the purified agents. Its high protective colloidal activity is demonstrated by the low Gold Number. The viscosity and surface tension establish a good spreading and clinging property which would be necessary for sustained protective action.

Further work is contemplated to investigate the skin buffering properties of these agents.

Summary

1. The physical and chemical properties of the colloidal adsorbents were determined.

2. A correlation between these values and the dermatologic properties of these agents was attempted. On the basis of the results of this study, colloidal oat-meal (AVEENO) appears to be an agent possessing most desirable properties for this purpose.

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A PHYTOCHEMICAL STUDY OF THE PERICARP OF PYRULARIA PUBERA

By August Danti *, Robert W. Sager **, and Joseph A. Bianculli ***

Introduction

PYRULARIA PUBERA Michaux, a shrub growing in certain areas of southwestern Pennsylvania, is a member of the Sandalwood Family, *Santalaceae*. Its small pear-shaped fruit is commonly called Buffalo Nut, Oil Nut, or Crazy Nut. The toxic connotation of the latter name as well as a report (1) ascribing pharmacologic activity to the intraperitoneal injection of a fluid extract made from the whole fruit suggested further investigation.

This investigation concerned itself with a phytochemical study of the pericarp and a preliminary study of the pharmacologic and antibiotic activity of extracts of the pericarp.

Experimental

Shortly after collection, the pericarp was removed from the fruit, air dried for five days and finally dried in an electric oven at 50° C. for 24 hours. The dried residue was ground and stored in an airtight amber glass jar. This constitutes the material subjected to a proximate analysis in the usual manner (2, 3).

All results of the analyses are based on the dry weight of the material.

PROXIMATE ANALYSIS

Crude Fiber	13.86%
Starch	4.64%
Reducing Sugars	0.88%
Pentosans	9.45%
Organic and Ammoniacal Nitrogen	1.60%
Volatile Oil	None
Alkaloids	None
Total Ash	17.48%
Water Soluble Ash	16.03%
Water Insoluble Ash	1.45%
Acid Insoluble Ash	0.24%

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SELECTIVE EXTRACTION

Solvent	*Per Cent Total Extract*	*Per Cent Non-Volatile*	*Per Cent Volatile*
Petroleum Ether	4.82	4.62	0.20
Ether	2.13	1.85	0.28
Chloroform	1.35	1.28	0.07
Alcohol	15.93	13.98	1.95
Water	39.39	—	—

An aqueous and an alcoholic extract were studied for antibiotic activity (4) against *Micrococcus pyogenes var. aureus* isolated from a clinical case (S. B. E.) and *Escherichia coli* (A. T. C. C. 8739). Neither extract showed any antibiotic activity.

The same alcoholic and aqueous extracts were administered to frogs (5) by various routes. No pronounced effects were observed.

Summary

Various qualitative and quantitative chemical analyses of the pericarp of *Pyrularia pubera* Michaux, *Santalaceae* were made.

Percentages of ash, crude fiber, starch, reducing sugars, pentosans, and nitrogen were reported.

Alkaloids and volatile oil were not found to be present.

Alcoholic and aqueous extracts showed neither antibiotic activity nor pronounced pharmacologic effect.

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(5) Preliminary pharmacology under the supervision of Edward C. Reif, Dean of the School of Pharmacy and Professor of Pharmacology, University of Pittsburgh, Pittsburgh, Pa.

BODY WEIGHT AND ITS CONTROL

WHILE many millions of the earth's population suffer with serious malnutrition, others are grossly obese and consume such a large excess of food that their lives are thereby shortened. Malnutrition is usually the result of a food shortage or famine, but it can and does exist in some individuals who have plenty of food. Such persons either do not choose to eat properly, are unable to do so for various reasons, or are unable to assimilate and utilize the food eaten.

The task of supplying an adequate food supply for the world's rapidly growing population is one of the most important socio-economic problems facing the United Nations. Some authorities claim it can be done by more rapid acceptance and adoption of agricultural technology by backward countries together with a better and more equitable distribution system. Others claim that agricultural production can never hope to keep abreast of the increased birth-rate which responds almost immediately to an improved food supply. Some countries—notably, India—are attacking this problem on all fronts by improving food production methods and trying at the same time to discourage the very high birth-rate existing there.

In this article on weight control, we shall assume that the food supply is ample and consider the problems of obesity and malnutrition as they exist under such circumstances.

Hunger is associated with rhythmic tonic contractions of the stomach which often reach a tetanic peak. These contractions appear in the stomach of the newborn and recur after feedings as the stomach empties. It has been demonstrated that the hypothalamus contains a hunger center (hyperphagic) and a feeding center which controls the hunger center. The hypothalamus is the center of the emotions in the brain and, therefore, the hunger drive which begins to function at birth becomes integrated with other hypothalamic mechanisms which control defense, attack, and various other emotional states.

The hunger drive becomes progressively more effective and, if uninhibited, more savage in the pursuit of food. The hunger drive can be relieved of all inhibition by damaging the feeding center in the hypothalamus. Animals so altered by surgical trauma continue to gorge themselves and become grossly obese. On the other hand, the hyperphagic center, if damaged, will cause the animal to spurn food and die of starvation.

The hunger drive in the growing child is modified in many ways by cerebral activity. Thus, the child is taught to modify his savage pursuit of food and to adopt table manners and follow social customs. In this way, the definition of food as accepted by the hypothalamus becomes widely extended by the cerebrum and previous experiences. For example, the nursing of the child by the mother becomes a ritualistic procedure. In a short time, her warmth, fondling, and lullaby are as much food to the hypothalamus as the milk consumed. If the child is deprived of these ancillary "foods", milk alone will not relieve its tension for food. As the child grows, is educated, and makes social contacts, the ritualistic content of the ancillary "food" required for emotional gratification becomes widely extended to various objects and relationships. These, to the casual observer, are not related to food at all but to the patient's mind.

There is in every individual a dynamic equilibrium between the physiological mechanism for the acquisition of food and that for its rejection (vomiting). Normally, the former is more potent but the latter can at times become predominant, with the following progressive steps ensuing: lack of interest in food, anorexia, nausea, and vomiting. While afferent stimuli may reach the vomiting center in the medulla from many sites, vomiting may also serve as a psychological protest against the deprivation of some ancillary component of food. It may even become a weapon of protest against situations buried in the patient's psyche such as is seen in anorexia nervosa.

On the other hand, eating may be a source of emotional satisfaction and even a substitute for other types of emotional gratification not available to the individual. The primary importance of disaster feeding is ample evidence of this. Some hot food is a well-known morale builder and is so used even by the Army and Navy under combat conditions.

We see, therefore, that eating or not eating has a strong emotional component and overeating or undereating may easily result.

Underweight, even in the presence of adequate food supplies, is a common condition. While psychic causes may underlie this state, it may also be caused by many other factors. A negative nitrogen balance usually takes place following injuries, surgery, hemorrhage, infections, and other conditions of stress. If this is allowed to continue, essential tissues are raided and the patient's recovery delayed. In many illnesses, the caloric requirement is increased as much as

50 per cent above normal. This is caused by such factors as fever, restlessness, and cough. Maintaining the patient's nutritional level ameliorates the clinical course of disease and greatly shortens the period of convalescence. While fat persons can go for considerable periods on a very low calorie diet, normal weight and underweight persons cannot do this without serious metabolic damage.

Protein hydrolysates, orally or by intravenous injection, are very useful in restoring nitrogen balance and the use of intravenous dextrose is, of course, a common practice. In recent years, finely divided fat emulsions have become very popular in maintaining the caloric intake of patients during illness or convalescence. Two such products, Lipomul (Upjohn) and Ediol (Schenley), are well tolerated orally. Fat contains 9 cal./Gm. as compared with only 4 cal./Gm. for both carbohydrate and protein. It has been shown that underweight persons gain best on a high fat diet when it can be tolerated. Ill persons who maintain their caloric intake protect their body protein which would otherwise be raided for energy requirements. When these emulsions cannot be taken orally, they can be given by stomach tube.

The occurrence of underweight is common in children. Faulty diet is often the cause and every effort should be made to maintain a well-balanced diet together with an adequate vitamin and mineral supply. Many children eat excessive quantities of carbohydrate and, thus, curtail their intake of other essential foods and vitamins.

Evidence has accumulated to the effect that vitamin B_{12} (Cyanocobalamin U. S. P.) in doses of 25 mcg. per day orally, stimulates growth in retarded children. The effect is entirely apart from its action as a hematopoietic agent. The use of thiamine hydrochloride (B_1) with B_{12} seems a rational combination for such growth-retarded children.

The anabolic effect of methyltestosterone and testosterone is well-known, but their androgenic action limits their use. A closely related steroid, methylandrostenediol, has similar anabolic (body building) effects without marked androgenic side effects. Methylandrostenediol is available as Methostan (Schering), Stenediol (Organon), and Androdiol (Carnrick).

Where emotional factors are involved in malnutrition, these must be uncovered and corrected by psychiatric therapy. No dietary or therapeutic regimen is likely to succeed if subconscious emotional conflicts are unresolved.

Obesity can be defined in many ways and it means different things to different people. Clinical obesity is that condition wherein a person's body weight is 15 per cent or more above the average for his or her weight. Biochemically, obesity is the presence of fat reserves in excess of 20 per cent of body weight.

Standard weight tables are misleading when used to judge whether a person is obese. They are actually arithmetic averages and they tend to be somewhat above ideal figures, particularly when based on values obtained in countries where overweight is quite prevalent. In the United States, for example, a person weighing somewhat less than the figure published for the average has a greater life-expectancy than a person weighing just the precise average figure. The higher averages given for older age groups also reflect the trend taken by most individuals rather than what is physiologic and optimal. Body build and physical activity also are important. Many athletes in perfect physical condition and having almost no body fat would be obese by these tables, while a person having considerable body fat and poorly developed muscles might be classified as normal.

Obesity, whenever it does exist, is *always* the result of overeating relative to the person's energy requirements. It may be caused by:

1. Endocrine disorders (rare).
2. Hypothalamic disease (rare).
3. Constitutional and/or psychic factors (95-98 per cent).

Many physicians in determining the basal metabolism of an obese patient overlook the important fact that it is the non-fatty tissues which constitute the metabolic core and which establish the body's requirement for energy. Unless a correction is applied to account for fat deposits, a false negative value usually results. Actually, most obese persons have a positive basal metabolic rate as one would expect of a person carrying a large weight of stored fat everywhere he went. The increased heart rate and respiration is good evidence of this. Most obese persons prefer to place the blame on endocrine disorders, but such is rarely the case.

Newburgh, an authority on obesity, lists a number of causes for obesity which we shall discuss briefly:

1. Overemphasis of food by parents in bringing up child. This may be an outward show of love to compensate for a sub-

conscious dislike of the child or it may be overprotection. The child learns to feel a sense of achievement in having consumed large quantities of food.

2. Gratification obtained by food flavors. Some people simply enjoy the flavor of food immensely.

3. Feeling of comfort and repose with a full stomach.

4. Temporary respite from anguish caused by intellectual, social, or sexual failure. There are vast numbers of people who are unhappy and substitute overeating for occupation, love, and unfulfilled sexual desires.

5. Food habits of youth carried over into middle age, even though need for food is diminished.

6. Disabling disease with its lessened energy requirement which is compensated for by indulgence in food.

In addition to these, other factors may also enter the picture such as familial and social environment. In many societies, food is a symbol of economic security. Families gather at frequent intervals around excessive amounts of appetizing food and beverages and are encouraged to overeat. In doing so, they establish their mutual sense of well-being and success. Significant events such as christenings, marriages, burials, etc., are accompanied by overeating. Many modern business men combine commercial transactions with the eating of expensive and rich foods. In many cases, these business conferences are marked by near-compulsive, self-inflicted, forced feeding. Obesity then becomes essentially an occupational hazard.

That there may be a glucostatic mechanism in some types of overeating seems well-established. This is surely the case in hunger diabetes. Here, the blood sugar is high but it is not available to the tissues. Some workers have shown a correlation between available glucose and the satisfaction of hunger in test animals. Thus, in cases where the peripheral arteriovenous blood glucose levels showed only a small difference, hunger was present. When this difference was large, the hunger was diminished or absent. This may explain what is often described as a biological appetite (lipophilia) in some individuals.

Obesity is a definite handicap to a person from the standpoint of his appearance. In addition to this obvious result of obesity, it is a

serious threat to well-being and longevity. Many of the metabolic and degenerative diseases have a much higher incidence among those who are obese. It is estimated that the life-expectancy of an obese individual is lowered 2 per cent for each kilogram in excess of normal weight. Those diseases known to occur more commonly and earlier in life in the obese are diabetes, hypertension, cardiac disease, osteoarthritis, and cancer. Often, the very obese diabetic can control his diabetes by weight reduction alone without using insulin. Atherosclerosis is also much accelerated in its development by overweight.

The obese patient prefers almost any method of weight reduction, however ineffective, to the one and only means of accomplishment—dieting. Many easy methods are widely advertised by those who exploit the desire to reduce without giving up food. Some of the proprietary products on the market are downright frauds. Those which are essentially harmless accomplish their purpose by the associated measures, including dieting, which are included in the directions. At one time, tablets containing thyroid were sold over the counter, but this drug is listed as a dangerous drug in most countries and restricted to prescription only.

Unfortunately, many physicians misuse thyroid in aiding patients to reduce. This is because of the error (previously described) in determining their basal metabolism. To give an obese person thyroid will, of course, cause him to lose weight but not without great potential damage. Thyroid is indicated only in those cases where hypothyroidism is definitely present and these are rare.

Exercise, massage, and hot baths—while freely recommended—are notoriously ineffective. It has been estimated that a person must walk 36 miles to lose one pound of body fat. Vigorous exercise is also dangerous for those of middle age or beyond, since it may cause some cardiovascular accident. Exercise may cause temporary loss of weight by sweating but this is rapidly regained as water is consumed and dehydration is corrected.

Massage has been tried experimentally on animals. Even when used so vigorously that multiple hemorrhages ensued, no fat was lost by the test animals.

Hot baths—like exercise—may cause dehydration through sweating, but this loss is quickly regained. It has been estimated that it would require 370 baths of one hour each, hot enough to raise body temperature 2°, to consume the calories present in one pound of fat

In the final analysis, diet restriction is the only way to correct obesity since overeating relative to the body's needs is *always* the direct cause of obesity. The difficulty arises in the need for reducing the caloric intake far below that required by a normal person. Only in this way can the body be forced to draw upon reserve fat for its energy requirements. For example, an adult with sedentary habits or work requires about 2400 calories daily. The obese patient eating at will may be consuming 4000 or more calories daily. Reducing the caloric intake to 2400 is not a sufficient reduction since, on this diet, little weight will be lost. Diets of from 450-1200 calories a day must be rigidly followed.

On such a drastically curtailed food intake, the patient obviously feels great hunger—at least for a time. No damage results to the patient's health, however, providing the diet is *qualitatively* correct. The protein requirements of the body (60 Gm./day) must be met and, in addition, the daily needs of the important vitamins and minerals must be supplied.

The latter can best be assured by administering a vitamin-mineral supplement, selecting one of the many such products on the market. While such a drastic diet would harm the normal person, it does no damage to the obese. It simply begins the process of drawing upon the body's fat reserves. It is rather interesting to note that, even on such a restricted diet, no weight may be lost for several days—and patients should be so informed. In the early stages, changes in tissue hydration take place which maintain body weight. After the first several days, there will be a progressive weight loss.

During the early weeks of rigid dieting, the central nervous stimulants—amphetamine, dextroamphetamine, and methamphetamine —are extremely helpful. These drugs depress the appetite and elevate the mood. By this means, they help the patient through a very difficult period. A number of drug combinations are available in this category. Some contain—in addition to the phenylamines named—such drugs as caffeine, atropine, thyroid, vitamins, and minerals. Atropine, by its parasympatholytic activity, reduces gastric motility and, thereby, hunger pangs. The addition of thyroid is open to question, as has been explained above.

It is quite important that the physician give psychiatric guidance to those patients whose overeating is an expression of some emotional disorder. Patients must get to understand that their huge and in-

satiable appetite is not the result of a physiologic need for food. It is important that this be explained and accepted, rather than to depend on the protracted use of the central nervous stimulants. Patients who have unresolved psychological problems may become dependent on these drugs and they may, in fact, become a substitute for overeating. It is doubtful, however, that the phenylamines are habit forming except in those who are emotionally unstable. Some patients may have difficulty in sleeping at night if these stimulants are given late in the day.

Once body weight has been brought to normal, the patent can have his diet slowly adjusted upward so that it just maintains normal weight. Here is where many physicians err in that the patient is released too soon. Once discharged, the patient is very likely to fall quickly into old eating habits and regain all the weight lost. Then, the painful, tedious process of rigid dieting must begin all over again. After several such relapses, most patients give up further efforts and become resigned to their "fate", claiming that they have tried dieting without success. Physicians must anticipate this and educate their patients for the maintenance period with the same attention as that given during the initial period of dieting. Regular check-ups at the physician's office are helpful in having the patient follow the prescribed maintenance diet.

The methylcellulose wafer (Melozets, Sharp & Dohme) patterned and flavored like a graham cracker has become enormously popular. It satisfies the uncontrollable urge to eat, without adding calories to the diet. These crackers when eaten must be accompanied by much water. In the stomach, the methylcellulose hydrates and gives a sense of fullness. Since the methylcellulose is non-digestible, it simply passes through the intestine and is eliminated in the feces. As a bulk hydrocolloid, it has a mild laxative effect. Water in ample amounts is essential. If these crackers are eaten without water, there is some risk of an impaction in the oesophagus or the intestine.

In conclusion, it should be stated again that obesity in an individual is not something ludicrous but a serious threat to his health. Neither is the outward appearance of happiness invariably a true indication of internal calm. Many obese individuals are utterly miserable and emotionally unstable. With these, overeating is a symptom of a deep psychological distress. Chronic alcoholism and obesity, while differing widely in symptoms, often have identical underlying causes.

LIST OF DRUGS ADMITTED TO U. S. P. XV.

A

Acacia
Acacia Mucilage
Acacia Syrup
Acetic Acid
Acetic Acid, Glacial
Acetrizoic Acid
Acetylsalicylic Acid (Aspirin)
Acetylsalicylic Acid (Aspirin) Tablets
Adrenal Cortex Injection, Aqueous
Adrenal Cortex in Oil Injection
Agar
Albumin, Serum
Alcohol
Alcohol, Diluted
Alcohol, (70%)
Almond Oil, Expressed
Aloe
Aluminum Acetate Solution
Aluminum Chloride
Aluminum Hydroxide Gel
Aluminum Hydroxide Gel, Dried
Aluminum Paste
Aluminum Phosphate Gel
Aluminum Subacetate Solution
Aluminum Sulfate
Amaranth
Amaranth Solution
Aminophylline
Aminophylline Injection
Aminophylline Suppositories
Aminophylline Tablets
Aminosalicylic Acid
Aminosalicylic Acid Tablets
Ammonia Solution, Diluted
Ammonia Solution, Strong
Ammonia Spirit, Aromatic
Ammonium Carbonate
Ammonium Chloride
Ammonium Chloride Capsules
Amobarbital (Amytal)
Amobarbital Tablets
Amobarbital Sodium
Amobarbital Sodium Capsules
Amobarbital Sodium, Sterile for Injection
Amphetamine Sulfate
Amphetamine Sulfate Tablets
Amyl Nitrite
Amylene Hydrate
Anise Oil
Antazoline (Antistine) Hydrochloride
Antimony Potassium Tartrate
Apomorphine Hydrochloride
Apomorphine Hydrochloride Tablets
Aromatic Elixir
Ascorbic Acid
Ascorbic Acid Injection
Ascorbic Acid Tablets
Aspidium
Aspidium Oleoresin
Aspidium Oleoresin Capsules
Atropine Sulfate
Atropine Sulfate Tablets
Aureomycin Hydrochloride
Aureomycin Hydrochloride Capsules
Aureomycin Hydrochloride Injection
Aureomycin Hydrochloride Solution, Ophthalmic

B

Bacitracin
Bacitracin Ointment, Dermatologic
Bacitracin Ointment, Ophthalmic
Bandage, Adhesive Absorbent
Barium Sulfate
Belladonna Leaf
Belladona Tincture
Bentonite
Bentonite Magma
Benzalkonium Chloride
Benzalkonium Chloride Solution
Benzene Hexachloride (Gammexane)
Benzethonium Chloride (Phemerol)
Benzethonium Chloride Solution
Benzoic Acid
Benzoic and Salicylic Acid Ointment
Benzoin
Benzoin Tincture
Benzoin Tincture, Compound
Benzyl Benzoate
Benzyl Benzoate Lotion
Bethanechol Chloride (Urecholine)
Bethanechol Chloride Injection
Bethanechol Chloride Tablets
Bishydroxycoumarin
Bishydroxycoumarin Tablets
Bismuth Subcarbonate
Bismuth Subsalicylate
Bismuth Subsalicylate in Oil Injection
Blood, Whole (Human)
Boric Acid
Butopyronoxyl (Indalone)

C

Cacao
Cacao Syrup
Caffeine
Caffeine and Sodium Benzoate
Caffeine and Sodium Benzoate Injection
Calamine
Calamine Lotion
Calamine Lotion, Phenolated
Calciferol (Vitamin D_2)
Calcium Aminosalicylate
Calcium Aminosalicylate Tablets
Calcium Carbonate, Precipitated
Calcium Chloride
Calcium Gluconate
Calcium Gluconate Injection
Calcium Gluconate Tablets
Calcium Hydroxide
Calcium Hydroxide Solution
Calcium Mandelate
Calcium Mandelate Tablets
Calcium Pantothenate
Calcium Phosphate, Dibasic
Camphor
Carbachol
Carbarsone
Carbarsone Capsules
Carbarsone Suppositories
Carbarsone Tablets
Carbon Dioxide
Cascara Sagrada
Cascara Sagrada Fluidextract, Aromatic
Castor Oil
Cellulose, Oxidized (Hemo-pak, Oxycel)
Cherry Juice
Cherry Syrup
Chiniofon
Chiniofon Tablets
Chloral Hydrate
Chloramphenicol (Chloromycetin)
Chloramphenicol Capsules
Chloramphenicol Injection
Chloramphenicol Ointment, Ophthalmic
Chlorcyclazine (Perazil) Hydrochloride
Chlorcyclazine Hydrochloride Tablets
Chlorobutanol
Chloroform
Chlorophenothane
Chloroquine (Aralen) Phosphate
Chloroquine Phosphate Tablets
Chlorothen (Tagathen) Citrate
Chlorothen Citrate Tablets
Chlorphenamine (Chlortrimeton) Maleate
Chlorphenamine Maleate Tablets
Cholera Vaccine
Cholesterol
Chorionic Gonadotropin
Chorionic Gonadotropin Injection
Chrysarobin
Chrysarobin Ointment
Cinnamon Oil
Cinnamon Water
Citric Acid
Citric Acid Syrup
Clove Oil
Coal Tar
Coal Tar Ointment (5%)
Coal Tar Solution
Coal Tar Paste
Cocaine Hydrochloride
Cod Liver Oil
Cod Liver Oil, Nondestearinated
Codeine Phosphate
Codeine Phospate Tablets
Colchicine
Colchicine Tablets
Collodion
Collodion, Flexible
Collodion, Salicylic
Congo Red
Congo Red Injection
Coriander Oil
Corn Oil
Corticotropin (ACTH)
Corticotropin Injection
Cortisone Acetate
Cortisone Acetate Injection
Cortisone Acetate Solution, Ophthalmic
Cortisone Acetate Tablets
Cotton, Purified
Cottonseed Oil
Cresol
Cyclopropane

D

Darrow's Solution
7-Dehydrocholesterol, Activated (Vitamin D_3)
Dehydrocholic Acid
Dehydrocholic Acid (Decholin) (Bile Salts) Tablets
Desoxycorticosterone Acetate
Desoxycorticosterone Acetate in Oil Injection
Desoxycorticosterone Acetate Pellets
Desoxycorticosterone Acetate Tablets, Buccal
Dextro-Amphetamine (Dexedrine)

Dextro-Amphetamine (Dexedrine) Tablets
Dextrose
Dextrose and Sodium Chloride Injection
Dextrose Injection
Dibucaine (Nupercaine) Hydrochloride
Dibucaine Hydrochloride Injection
Dienestrol
Dienestrol Tablets
Diethylcarbamazine (Hetrazan)
Diethylcarbamazine Tablets
Diethylstilbestrol
Diethylstilbestrol Tablets
Digitalis
Digitalis Capsules
Digitalis, Powdered
Digitalis Tablets
Digitoxin
Digitoxin Injection
Digitoxin Tablets
Digoxin
Digoxin Injection
Digoxin Tablets
Dihydromorphinone (Dilaudid) Hydrochloride
Dihydromorphinone Hydrochloride Injection
Dihydromorphinone Hydrochloride Tablets
Dihydrostreptomycin Sulfate
Dihydrostreptomycin Sulfate Injection
Dihydrotachysterol
Dihydrotachysterol Solution (Oil) (Hytakerol)
Diiodohydroxyquinoline
Diiodohydroxyquinoline Tablets
Diisopropylfluorophosphate (DFP)
Dimenhydrinate (Dramamine)
Dimenhydrinate Tablets
Dimercaprol (BAL)
Dimercaprol Injection
Dimethylphthalate
Dimethylphthalate Solution Compound (622)
Diphenhydramine (Benadryl) Hydrochloride
Diphenhydramine Hydrochloride Capsules
Diphenhydramine Hydrochloride Elixir
Diphenylhydantoin (Dilantin) Sodium
Diphenylhydantoin Sodium Capsules
Diphtheria and Tetanus Toxoids, Alum Precipitated
Diphtheria and Tetanus Toxoids, Aluminum Hydroxide Adsorbed
Diphtheria and Tetanus Toxoids, and Pertussis Vaccine Combined, Alum Precipitated
Diphtheria and Tetanus Toxoids and Pertussis Vaccine Combined, Aluminum Hydroxide, Adsorbed
Diphtheria Antitoxin
Diphtheria Toxin, Diagnostic
Diphtheria Toxin, Inactivated for Diagnostic Test Control
Diphtheria Toxoid
Diphtheria Toxoid, Alum Precipitated
Diphtheria Toxoid, Aluminum Hydroxide Adsorbed
Doxylamine (Decapryn) Succinate
Doxylamine Succinate Tablets
Dusting Powder, Adsorbable

E

Emetine Hydrochloride
Emetine Hydrochloride Injection
Ephedrine Sulfate
Ephedrine Sulfate Capsules
Ephedrine Sulfate Injection
Ephedrine Sulfate Tablets
Epinephrine
Epinephrine Inhalation (1:100)
Epinephrine Injection (1:1000)
Epinephrine in Oil Injection
Epinephrine Solution (1:1000)
Epinephrine Bitartrate
Epinephrine Bitartrate Ointment, Ophthalmic
Ergonovine Maleate
Ergnovine Maleate Injection
Ergonovine Maleate Tablets
Ergotamine Tartrate
Ergotamine Tartrate Injection
Ergotamine Tartrate Tablets
Erythromycin
Erythromycin Tablets
Estradiol Benzoate
Estradiol Benzoate (Oil) Injection
Estradiol Benzoate Suspension, (Aqueous)
Estradiol Dipropionate
Estradiol Dipropionate (Oil) Injection
Estrogen Ointment
Estrogen Suppositories (Vaginal)
Estrogenic Substances
Estrogenic Substances, Tablets
Estrone
Estrone (Oil) Injection
Ether

Ethinyl Estradiol
Ethinyl Estradiol Tablets
Ethisterone
Ethisterone Tablets
Ethohexadiol (Rutgers 612)
Ethyl Chloride
Ethyl Oxide
Ethylene
Ethylenediamine Solution
Ethylmorphine Hydrochloride
Eucalyptol
Eucatropine Hydrochloride
Eugenol
Evans Blue (T-1824)
Evans Blue (T-1824) Injection

F

Fennel Oil
Ferrous Gluconate
Ferrous Gluconate Tablets
Ferrous Sulfate
Ferrous Sulfate, Exsiccated
Ferrous Sulfate Syrup
Ferrous Sulfate Tablets
Fluorescein Sodium
Fluorescein Sodium Injection
Folic Acid
Folic Acid Capsules
Folic Acid Injection
Folic Acid Tablets
Formaldehyde Solution

G

Gauze, Absorbent
Gauze, Absorbent, Sterile
Gauze Bandage
Gelatin
Gelatin, Glycerinated
Globulin, Antihemophilic
Globulin, Immune Serum (Human)
Glucose, Liquid
Glycerin
Glycerin Suppositories
Glyceryl Trinitrate Tablets
Glycyrrhiza
Glycyrrhiza Extract, Pure
Glycyrrhiza Fluidextract
Glycyrrhiza Syrup

H

Halibut Liver Oil
Halibut Liver Oil Capsules
Helium
Heparin Sodium
Heparin Sodium Injection
Hexachlorophene Soap
Hexylresorcinol
Hexylresorcinol Pills
Histamine Phosphate
Histamine Phosphate Injection
Homatropine Hydrobromide
Homatropine Methylbromide
Homatropine Methylbromide Tablets
Hyaluronidase
Hydrochloric Acid
Hydrocortisone Acetate (Compound F)
Hydrocortisone Acetate Injection (Oil)
Hydrocortisone Acetae Suspension
Hydrogen Peroxide Solution
Hydroxyamphetamine Hydrobromide (Paredrine)

I

Insulin Injection
Insulin, Globin Zinc, Injection
Insulin, Isophane (NPH) Injection
Insulin, Protamine Zinc, Injection
Iodide, Radioactive
Iodine
Iodine Solution, Strong
Iodine Tincture
Iodized Oil
Iodoalphionic Acid
Iodoalphionic Acid (Priodax) Tablets
Iodochlorhydroxyquin
Iodochlorhydroxyquin Powder, Compound
Iodophthalein Sodium
Iodopyracet (Diodrast) Injection
Iopanoic Acid (Telepaque)
Iopanoic Acid Tablets
Iophendylate Injection (Pantopaque)
Ipecac
Ipecac Fluidextract
Ipecac Syrup
Isoniazid
Isoniazid Tablets
Isoproterenol (Isuprel) Hydrochloride
Isoproterenol Hydrochloride Spray
Isoproterenol Hydrochloride Sublingual Tablets

J, K

Juniper Tar
Kaolin

L

Lactic Acid
Lactose
Lanatoside C
Lanatoside C Injection
Lavender Oil
Lemon Oil
Lemon Peel

Lemon Tincture
Levarterenol Bitartrate (Levophed)
Levarterenol Bitartrate Injection
Liver Extract
Liver Injection
Liver Injection, Crude
Liver Solution
Liver with Stomach
Liver with Stomach Capsules

M

Magnesia Magma
Magnesium Carbonate
Magnesium Oxide
Magnesium Oxide, Heavy
Magnesium Stearate
Magnesium Sulfate
Magnesium Trisilicate
Magnesium Trisilicate Tablets
Menadione
Menadione Capsules
Menadione Tablets
Menadione Sodium Bisulfite
Menadione Sodium Bisulfite Injection
Menthol
Meperidine (Demerol) Hydrochloride
Meperidine Hydrochloride Injection
Meperidine Hydrochloride Tablets
Mephentermine
Mephentermine Injection (Wyamine)
Meralluride (Mercuhydrin)
Meralluride Sodium Injection
Mercaptomerin (Thiomerin) Sodium
Mercaptomerin Sodium Injection
Mercurophylline (Mercuzanthin, Mercupurin)
Mercurophylline Injection
Mercurophylline Tablets
Mercury, Ammoniated
Mercury, Ammoniated Ointment (5%)
Mercury, Ammoniated Ointment, (Ophthalmic (3%)
Mercury Bichloride
Mersalyl
Mersalyl and Theophylline Injection
Mersalyl and Theophylline Tablets
Methacholine Chloride (Mecholyl)
Methacholine Chloride Injection
Methadone Hydrochloride
Methadone Hydrochloride Injection
Methadone Hydrochloride Tablets
Methamphetamine (Desoxyephedrine, Desoxyn, etc.) Hydrochloride
Methamphetamine Hydrochloride Tablets
Methantheline Bromide (Banthine)
Methantheline Bromide Tablets
Methapyrilene Hydrochloride (Histadyl, Thenylene)
Methapyrilene Hydrochloride Tablets
Methenamine
Methenamine Tablets
Methenamine Mandelate
Methenamine Mandelate Tablets
Methimazole (Tapazole)
Methimazole Tablets
Methiodal Sodium (Skiodan)
Methiodal Sodium Injection
Methoxamine Hydrochloride
Methoxamine Hydrochloride Injection (Vasoxyl)
Methylcellulose
Methyl Salicylate
Methylparaben
Methylrosaniline Chloride
Methylrosaniline Chloride Solution (1%)
Methylrosaniline Chloride Tablets
Methyltestosterone
Methyltestosterone Tablets
Methyltestosterone Tablets, Buccal
Methylthiouracil
Methylthiouracil Tablets
Morphine Hydrochloride
Morphine Injection
Morphine Sulfate
Morphine Sulfate Tablets
Myristica Oil

N

Neomycin Sulfate
Neomycin Sulfate Ointment
Neomycin Sulfate Ointment, Ophthalmic
Neomycin Sulfate Tablets
Neostigmine (Prostigmine) Bromide
Neostigmine Bromide Tablets
Neostigmine Methylsulfate
Neostigmine Methylsulfate Injection
Nicotinamide
Nicotinamide Capsules
Nicotinamide Injection
Nicotinamide Tablets
Nicotinic Acid
Nicotinic Acid Injection
Nicotinic Acid Tablets
Nikethamide
Nikethamide Injection
Nitrogen
Nitrous Oxide

O

Ointment, Hydrophilic
Ointment, White
Ointment, Yellow

Oleic Acid
Oleovitamin A
Oleovitamin A Capsules
Oleovitamin D, Synthetic
Olive Oil
Opium
Opium, Granulated
Opium, Powdered
Opium Tincture
Opium Tincture, Camphorated
Orange Oil
Orange Peel, Sweet
Orange Peel, Sweet, Tincture
Orange Spirit, Compound
Orange Syrup
Ouabain
Ouabain Injection
Oxophenarsine Hydrochloride
Oxygen
Oxytetracycline Hydrochloride (Terramycin)
Oxytetracycline Hydrochloride Capsules
Oxytetracycline Hydrochloride Injection
Oxytetracycline Hydrochloride Solution, Ophthalmic
Oxytocin Injection

P

Papaverine Hydrochloride
Papaverine Hydrochloride Injection
Paraffin
Paraldehyde
Parathyroid Injection
Peanut Oil
Penicillin, Buffered Crystalline
Penicillin Potassium
Penicillin G Potassium
Penicillin G Procaine
Penicillin Sodium
Penicillin G Sodium
Penicillin G Sodium, Buffered Tablets
Penicillin G Sodium, Unbuffered Tablets
Penicillin Procaine for Aqueous Suspension
Penicillin Procaine Suspension with Aluminum Stearate
Penicillin Tablets
Pentobarbital Sodium
Pentobarbital Sodium (Nembutal) Capsules
Pentobarbital Sodium, Sterile
Pentylenetetrazole (Metrazole)
Pentylenetetrazole Injection
Peppermint
Peppermint Oil
Peppermint Spirit
Peppermint Water
Persic Oil
Pertussis Vaccine
Pertussis Vaccine, Alum Precipitated
Peruvian Balsam
Petrolatum
Petrolatum Gauze
Petrolatum, Hydrophilic
Petrolatum, Liquid
Petrolatum, White
Phenindamine Tartrate (Thephorin)
Phenindamine Tartrate Tablets
Phenobarbital
Phenobarbital Elixir
Phenobarbital Tablets
Phenobarbital Sodium
Phenobarbital Sodium, Sterile
Phenol
Phenol, Liquefied
Phenolphthalein
Phenolsulfonphthalein
Phenolsulfonphthalein Injection
Phentolamine Methane Sulfonate
Phentolamine Methane Sulfonate Injection (Regitine)
Phentolamine Methane Sulfonate Tablets
Phenylephrine (Neo-synephrine) Hydrochloride
Phenylephrine Hydrochloride Injection
Phenylephrine Hydrochloride Solution
Phthalylsulfathiazole
Phthlylsulfathiazole Tablets
Physostigmine Salicylate
Phytonadione (Vitamin K_1)
Pilocarpine Hydrochloride
Pilocarpine Nitrate
Piperocaine (Metycaine) Hydrochloride
Piperocaine Hydrochloride Injection
Pituitary, Posterior, Powder
Pituitary, Posterior, Injection
Plague Vaccine
Plasma, Human
Plaster, Adhesive
Plaster, Sterile Adhesive
Podophyllum
Podophyllum Resin
Polyethylene Glycol 400
Polyethylene Glycol 4000
Polyethylene Glycol Ointment
Polymyxin B Sulfate
Polymyxin B Sulfate Ointment
Polymyxin B Sulfate Tablets

Polysorbate 80
Potassium Bicarbonate
Potassium Chloride
Potassium Chloride Injection
Potassium Chloride Tablets
Potassium Hydroxide
Potassium Iodide
Potassium Permanganate
Potassium Permanganate Tablets
Primaquine Phosphate
Primaquine Phosphate Tablets
Procaine Amide Hydrochloride
Procaine Amide Hydrochloride Capsules
Procaine Amide Hydrochloride Injection
Procaine Hydrochloride
Procaine Hydrochloride Injection
Procaine Hydrochloride, Sterile
Procaine Hydrochloride and Epinephrine Injection
Progesterone
Progesterone Aqueous Suspension
Progesterone Injection
Progesterone Tablets, Buccal
Propylene Glycol
Propylhexedrine
Propylhexedrine Inhalant
Propylparaben
Propylthiouracil
Propylthiouracil Tablets
Protein Hydrolysate Injection
Protein Hydrolysate Injection, Low Sodium
Pyrathlazine Hydochloride (Pyrrolazote)
Pyrathiazine Hydochloride Tablets
Pyridoxine Hydrochloride
Pyrilamine Maleate (Neo-antergan)
Pyrilamine Maleate Tablets
Pyroxylin

Q

Quillaja
Quinacrine (Atrabrine) Hydrochloride
Quinacrine Hydrochloride Tablets
Quinidine Sulfate
Quinidine Sulfate Capsules
Quinidine Sulfate Tablets
Quinine Hydrochloride
Quinine Sulfate
Quinine Sulfate Capsules
Quinine Sulfate Tablets

R

Rabies Vaccine
Raspberry Juice
Raspberry Syrup
Resorcinol
Riboflavin
Riboflavin Injection
Riboflavin Tablets
Ringer's Solution
Ringer's Solution, Lactated
Rose Oil
Rose Water
Rose Water Ointment
Rose Water Ointment, Petrolatum
Rose Water, Stronger

S

Saccharin
Saccharin Sodium
Saccharin Sodium Tablets
Salicylic Acid
Salicylic Acid Plaster
Scopolamine Hydrobromide
Scopolamine Hydrobromide Injection
Secobarbital Sodium (Seconal)
Secobarbital Sodium Capsules
Serum, Anti-A-Blood Grouping
Serum, Anti-B-Blood Grouping
Serum, Anti-Rh double prime Typing
Serum, Anti-Rh prime Typing
Serum, Anti-Rh Typing
Serum, Pertussis Immune (Human)
Sesame Oil
Siliceous Earth, Purified
Silver Nitrate
Silver Nitrate Solution, Ophthalmic
Silver Nitrate, Toughened
Smallpox Vaccine
Soap, Medicinal Soft
Soap, Liniment, Soft
Soda Lime
Sodium Acetrizoate (Urokon Sodium) Injection
Sodium Aminosalicylate
Sodium Aminosalicylate Tablets
Sodium Benzoate
Sodium Bicarbonate
Sodium Bicarbonate Tablets
Sodium Biphosphate
Sodium Biphosphate Tablets
Sodium Bisulfite
Sodium Borate
Sodium Bromide
Sodium Carbonate
Sodium Chloride
Sodium Chloride Solution, Isotonic
Sodium Chloride Tablets
Sodium Citrate
Sodium Citrate, Citric Acid and Dextrose Solution, Anticoagulant
Sodium Citrate Solution, Anticoagulant

Sodium Fluoride
Sodium Hydroxide
Sodium Indigotindisulfonate
Sodium Indigotindisulfonate Injection
Sodium Iodide
Sodium Iodomethamate (Neo-Iopax)
Sodium Iodomethamate Injection
Sodium Lactate Injection
Sodium Lauryl Sulfate
Sodium Morrhuate Injection
Sodium Nitrite
Sodium Nitrite Tablets
Sodium Salicylate
Sodium Salicylate Tablets
Sodium Sterate
Spermaceti
Sponge, Absorbable Gelatin (Gelfoam)
Starch
Starch Glycerite
Stearic Acid
Stearyl Alcohol
Stibophen
Stibophen Injection
Stomach, Powdered
Storax
Streptomycin Sulfate
Streptomycin Sulfate Injection
Succinylcholine Chloride
Succinylcholine Chloride Injection
Succinylsulfathiazole
Succinylsulfathiazole Tablets
Sucrose
Sulfacetamide
Sulfacetamide Tablets
Sulfacetamide Sodium
Sulfacetamide Sodium Ointment (10%)
Sulfacetamide Sodium Solution (30%)
Sulfadiazine
Sulfadiazine Tablets
Sulfadiazine Sodium
Sulfadiazine Sodium Injection
Sulfadiazine Sodium, Sterile
Sulfadiazine-Sulfamerazine-Sulfamethazine Suspension
Sulfadiazine-Sulfamerazine-Sulfamethazine Tablets
Sulfamerazine
Sulfamerazine Tablets
Sulfamerazine Sodium
Sulfamerazine Sodium, Sterile
Sulfamethazine
Sulfapyridine
Sulfapyridine Tablets
Sulfisoxazole (Gantrisin)
Sulfisoxazole Tablets
Sulfobromophthalein Sodium
Sulfobromophthalein Sodium Injection
Sulfoxone Sodium
Sulfoxone Sodium Tablets
Sulfur Dioxide
Sulfur Ointment
Sulfur, Precipitated
Sulfurated Potash
Suramin Sodium
Suramin Sodium, Sterile
Suture, Surgical Absorbable
Suture, Surgical, Non-absorbable
Syrup

T

Talc
Terramycin Hydrochloride
Terramycin Hydrochloride Capsules
Terramycin Hydrochloride Injection
Terramycin Hydrochloride Solution, Ophthalmic
Testosterone
Testosterone Pellets
Testosterone Suspension, Aqueous
Testosterone Tablets, Buccal
Testosterone Propionate
Testosterone Propionate Injection
Testosterone Propionate Suspension, Aqueous
Tetanus Antitoxin
Tetanus Toxoid
Tetanus Toxoid, Alum Precipitated
Tetanus Toxoid, Aluminum Hydroxide, Adsorbed
Tetracaine (Pontocaine) Hydrochloride
Tetracaine Hydrochloride Injection
Tetracaine Hydrochloride Ointment
Tetrachloroethylene
Tetrachloroethylene Capsules
Thenyldiamine (Thenfadil) Hydrochloride
Thenyldiamine Hydrochloride Tablets
Theobroma Oil
Theophylline
Thiamine Hydrochloride
Thiamine Hydrochloride Injection
Thiamine Hydrochloride Tablets
Thiamine Mononitrate
Thiopental (Pentothal) Sodium
Thiopental Sodium, Sterile
Thonzylamine (Neohetramine)
Thonzylamine Tablets
Thrombin
Thromboplastin
Thyroid

Thyroid Tablets
Tolazoline Hydrochloride (Priscoline)
Tolazoline Hydrochloride Tablets
Tolu Balsam
Tolu Balsam Syrup
Tolu Balsam Tincture
Tragacanth
Tribromoethanol (Avertin)
Tribromoethanol Solution
Trichloroacetic Acid
Trichloroethylene
Triethanolamine
Trimethadione (Tridione)
Trimethadione Capsules
Trimethadione Solution
Trimethadione Tablets
Tripelennamine Hydrochloride
Tripelennamine Hydrochloride Tablets
Tryparsamide
Tuberculin, Old
Tuberculin, Purified Protein Derivative of
Tubocurarine Chloride
Tubocurarine Chloride Injection
Typhoid and Paratyphoid Vaccine
Typhoid Vaccine
Typhus, Vaccine, Epidemic
Tyrothricin
Tyrothricin Spray

U

Undecylenic Acid
Urea
Ureastibamine
Urethan

V

Vanilla
Vanilla Tincture
Vasopressin (Pitressin) Injection
Vasopressin Tannate Injection
Vinyl Ether
Vitamin A Acetate
Vitamin A Palmitate
Vitamin A, Water-Miscible
Vitamin B Complex Syrup
Vitamin B_{12}
Vitamin B_{12} Injection
Vitamin B_{12} with Intrinsic Factor Concentrate
Vitamin B_{12} with Intrinsic Factor Concentrate Capsules
Vitamin B_{12} with Intrinsic Factor Concentrate Tablets
Vitamin K[1] (Synkayvite)

W

Water
Water, Distilled
Water, Distilled, Sterile
Water for Injection
Wax, White
Wax, Yellow
White Lotion
Wild Cherry
Wild Cherry Syrup
Wool Fat
Wool Fat, Hydrous

Y

Yeast, Dried
Yeast, Dried, Tablets
Yellow Fever Vaccine

Z

Zinc Gelatin
Zinc Oxide
Zinc Oxide Ointment
Zinc Oxide Paste
Zinc Peroxide, Medicinal
Zinc Stearate
Zinc Sulfate
Zinc Undecylenate

[1] Sodium Menadiol Diphosphate.

EDITOR'S NOTE—Since this list was compiled several additional substances have been voted upon by the Subcommittee on Scope. The above list is therefore not final or complete.

SELECTED ABSTRACTS

An Evaluation of Buffer Antacids. Gore, D. N., Martin, B. K., and Taylor, M. P. *J. Pharm. Pharmacol. 5*:686 (1953). The efficacy of an antacid depends, among other properties, upon the rate at which it can exert its effect on the gastric juice, the pH to which it will raise the juice when the antacid is present in excess, and its capacity to maintain the pH in the face of continued secretion of fresh juice.

A laboratory method for evaluating these properties was suggested by the authors as an improvement over the B. P. C. 1949 and U. S. P. XIV methods. A 1.0 Gm. sample (100 mesh) is added to 200 cc. of water and 3 cc. of N hydrochloric acid. The mixture is agitated continuously by mechanical stirrer. The pH is determined electrometrically at intervals of 5 min. over a period of 30 min. Subsequently, 1 cc. of N hydrochloric acid is added at intervals of 10 min., the pH determined immediately prior to each successive addition. This procedure is continued for a period of time depending upon the rate of fall of the pH and the minimum level set for the substance under test.

The first 30 minutes of the test attempts to evaluate the first two factors mentioned above while the remainder of the test is concerned with the capacity of the antacid. The quantities and strengths of reagents used in the test have been selected as a reasonable approximation of the values found in the usual untreated hyperacidic stomach.

The authors particularly applied their test to dried aluminum hydroxide gels and aluminum glycinate. They found a widely divergent antacid activity in four samples of dried aluminum hydroxide gel when tested by the above method. All of the samples had passed the present official test.

The authors suggested a standard for dried aluminum hydroxide gel as a pH of 3.5 to 4.5 after the initial 30 minutes and a total acid consumption of not less than 10 cc. of N hydrochloric acid before the pH falls below 3.5 within 100 minutes under the conditions of the test.

Notes on Various Containers and Closures in Use in the Pharmaceutical Industry. Stephenson, D., *J. Pharm. Pharmacol. 5:999* (1593). The author discussed some of the factors involved in testing containers other than glass, and their closures. He pointed out initially that there are few standards available for containers as such.

One of the first factors to consider is inertness of the container toward the contents. With dry solids an examination of the drug and of the inside of the container is usually sufficient to judge whether or not interaction has occurred. With liquids or semi-solids enclosed in metallic containers, the evidence of corrosion should be looked for particularly at the liquid-air interface. Because of the high cost of tin tubes, tin-coated lead tubes are frequently employed. Considerable danger is involved in the use of such containers should the tin plating become cracked or scraped away. An illustration was given of a high degree of lead contamination of a silver picrate tragacanth jelly stored for several months in such tubes. Aluminum tubes are also frequently employed. These should not be used for aqueous preparations having a pH of less than 6.5 or more than 8.0.

Containers should also be tested for sufficient strength for the protection of the contents under anticipated conditions of use and handling, for leakage at elevated temperatures and various positions, and for permeability to vapors. Probably protection from the permeation of moisture vapor into the container is the most frequent type of permeability involved, particularly where the product is to be sent to a tropical climate. A test method using elevated temperature and high humidity was described.

In the experience of the author cork-closed bottles provided greater protection for tablet contents than bottles closed with an aluminum screw-cap with a composition cork wad faced with "ceresine". Some of these containers were exposed at the docks to the war-time effects of blast, fire, and the water of the fire-fighters. One marked factor with regard to cork closures is the fact that the taper of the cork and its resilience reduces the importance of variations in the internal diameter of the bottle neck. Cotton wadding is also apt to be pushed into the bottle without strands being left to provide vapor passageways. When screw-cap closures are applied, a strand of cotton may provide such a passageway should it lie over the rim of the bottle. With the screw-cap closure, it should be

obvious that the best seals are obtained when the glass bottle rim at the point of seal is flat and smooth. The presence of mold marks on the rim of the bottle may tear the wadding or prevent a complete seal. The author found that plastic screw-caps on glass bottles tend to loosen on standing, apparently due to the swelling and contraction of the caps because of humidity changes.

The liner wad is usually stamped from sheet material composed of two layers, a resilient backing layer and a resistant facing layer. The backing layer is usually of pulpboard or cork and provides "spring." The facing layer may be of many substances, including lacquers, varnishes, plastics, and metal foils.

The newer molded neck tubes and bottles with polyethylene stoppers proved to provide a very efficient closure in the tests recorded.

A strip pack type of closure using an aluminum foil made from 99.5 per cent pure aluminum with a thickness of 0.032 mm. and coated with heat sealing lacquer protected hygroscopic material for 6 months as well as did a corked bottle in the experience of the author. Much less satisfactory results were obtained with some other commercial samples of foil strip packs.

The author concluded that as more experience is gained in the plastics field he felt that container and closure materials nearer to the ideal would be developed.

An Evaluation of Emulsion Stability Using Elevated Temperature as an Artificial Breakdown Stress. Levius, H. P., and Drommond, F. G. *J. Pharm. Pharmacol. 5:*743 (1953). The problem of the evaluation of emulsion stability is complex. Storage tests usually require a prolonged period of time and then the results are often evaluated rather approximately in a visual manner. The authors approached the problem using two methods of evaluation at elevated temperatures. Actually, the temperatures employed varied from 4° C. to 85° C.

The two methods used were both microscopic, one a size frequency analysis and the other a method of globule counting. The techniques were described. From the data obtained by these methods of analyses the rate of decrease of the total interfacial area over a given period of time was calculated. The greater the rate of decrease the lower, in general, was the stability of the emulsion.

Although both methods were capable of detecting relatively small degrees of deterioration in the six types of emulsions studied (different emulsifying agents but all liquid petrolatum-water dispersions), the size frequency analysis method appeared to be more reliable. Subsequent storage tests roughly followed the pattern shown by the accelerated tests.

In this work, the optimum stability was obtained at about 30° C. The stability usually decreased as the temperature varied above or below this level. Particularly, above 40° C. the rate of decrease of interfacial area increased with a rise in temperature.

As a result of this work the authors concluded that short-term stability tests performed at elevated temperatures will give some reliable information as to the comparative behavior of emulsions under normal storage conditions.

Anaerobic Decomposition of Ascorbic Acid. Huelin, F. E., *Food Research 18:*633 (1953). The decomposition of ascorbic acid by atmospheric oxygen is well known. It has also been found that the ascorbic acid content of canned foods continues to decrease throughout their storage life. This occurs despite the fact that only a minimal amount of free oxygen is present within the can immediately after processing and this disappears entirely within a month.

The author used a citrate-phosphate buffer as the vehicle for the ascorbic acid. The solution was stored anaerobically in small glass tubes at a temperature of 100° C. and then at 30° C. The pH was varied from 2.2 to 6.0.

The author found that the destruction of ascorbic acid in the pure buffer system proceeded most rapidly at a pH of 3 to 4. However, the destruction in the pure buffer system was often not as great as was found in fruit and vegetable products. Therefore, a series of naturally occurring carbohydrates, acids, and nitrogenous compounds were added to the buffer system to determine their effect. The results indicated that fructose, fructose-6-phosphate, and fructose-1,6-phosphate markedly accelerated the rate of decomposition, particularly at the higher pH levels. The effect of sucrose appeared to be due to the liberation of fructose.

The principal products of decomposition were furfural and carbon dioxide, particularly at higher temperatures, and greater acidities.

An Evaluation of Oral Human Temperature Readings. Harmon, F. L. *Science 118:*719 (1953). Although many studies have been made on the variability of body temperatures, none have provided a systematic method for evaluating the significance of a given temperature reading or of a difference between two readings taken under specified circumstances. The author reported on a possible approach based upon methods used in metabolism measurements.

The data obtained in this study was obtained from 29 apparently normal male students ranging in age from 17 to 27 years. A total of twelve readings were made on each student, one at 8:00 A. M. (before breakfast), one at 12:00 M., 6:00 P. M., and one at 10:00 P. M. These were repeated on three different days, each about a week apart. Prior to each reading the subject rested on a cot for 30 minutes. The same thermometer was used in all of the readings for all of the subjects.

The 348 readings obtained ranged from 95.4° to 99.1° F., and averaged 98.0° F. The individual means for the 29 subjects ranged from 97.2° to 98.5°. The mean readings for the 4 different times of the day ranged from a low of 97.5° at 8:00 A. M. to a high of 98.2° at 6:00 P. M., while the three daily means varied by less than 0.1°.

A statistical analysis of these findings indicate that a significant difference exists between any single reading in comparison with some hypothetical value, such as, "normal temperature," in 99 out of 100 cases in which the difference is 0.7° F. or more. Likewise, a significant difference exists in 99 per cent of the cases when a difference of 1.5° F. or more is found between comparable readings made upon two individuals at the same time of day or between two readings made upon one individual at the same hour of different days. If, however, the readings are made at different times of day the difference must equal at least 2.4° F. for the same level of confidence.

BOOK REVIEWS

A Bibliography of the Research in Tissue Culture, 1884 to 1950. An Index to the Literature of the Living Cell Cultivated *In Vitro*. Prepared by Margaret R. Murray and Gertrude Kopech; Volume I—A-K, Volume II—L-Z, with Supplementary Author List—1950-1953. New York, Academic Press, Inc., 1953.

This is an excellent bibliography which should prove highly useful, not only to workers in the field of tissue culture but in a great number of related areas. The project of compiling this publication was undertaken by the Tissue Culture Commission and its successor, the Tissue Culture Association, organized in 1946 at the Hershey Conference on Tissue Culture under the sponsorship of the Committee on Growth of the National Research Council.

The book is a concise compilation of references concerning *in vitro* maintenance of isolated cells or tissues of animals or plants. Papers concerning cultivation of protozoa, bacteria, rickettsia, and viruses are not included *per se*, but only if these cultures are in connection with animal or plant tissue cultures. The references are arranged with author and subject entries in alphabetical order. Excellent cross-references are available.

There is a great need, indeed, for similar bibliography in specialized fields; this one may aid the work of the research worker and also be the source of stimulation for further projects. Among the bibliographies prepared in the last decade on specialized topics, this one is outstanding, in the reviewer's opinion. It shows the hand of workers who are familiar not only with bibliographic techniques but also with the topic with which they are dealing. Since the method of tissue culture is becoming more and more an important tool in many disciplines (pharmacology, physiology, biochemistry, cancer research, virology, hematology, etc.), the book should certainly be welcomed by a large number of research workers.

JULIAN L. AMBRUS

Pharmacy and Medicine in Old Edinburgh. By C. G. Drummond, M. P. S. 36 pages, paperbound. The Pharmaceutical Press, 17 Bloomsbury Square, London, W.C. 1. England. Price, 2s, 6d. (postpaid).

This is a well illustrated printing of a paper read at an evening meeting of the Scottish Department of the Pharmaceutical Society in Edinburgh. It is quite interesting, especially to those who like to compare formulas, and medical and pharmaceutical practices of the eighteenth century and today. Many of the old prescriptions clearly reproduced in this pamphlet show the valiant efforts made by the pharmacists and medical men of that time to do so much with so little at their command. This is good reading and splendid reference.

JOHN E. KRAMER

Historical Metrology. By A. E. Berriman. 224 pages, illustrated with 65 photographs and line drawings. $3.75. E. P. Dutton and Co., 300 Fourth Avenue, New York 10, N. Y.

The subject of weights and measures is of interest to many, of importance to all. Often, we are confused by the differences encountered in the various systems of weights and measures in use today, especially in the United States, where the metric system has not yet been adopted as the single standard.

Should we try to go back into history to find the origins of the units of weight and measure, we would find that many other systems preceded those most familiar to us now. Each of the ancient nations seemed to have its own,—Babylonia, Egypt, Palestine, India, China, Greece, Rome, Britain. Scientists, technologists, agriculturalists, meteorologists, numismatists, and many more must rely upon sound standards.

This book, in great detail, traces the various systems through progressive ages and nationalities. Many interesting and novel facts may be found by the casual reader, and many important facts can be found by the person who uses this as a reference volume. There is a splendid index and a competent bibliography. The illustrations help considerably in understanding a difficult subject.

JOHN E. KRAMER

The Natural History of Infectious Disease. By Sir Macfarlane Burnet. Cambridge University Press, New York, 1953. 356 pp. ($4.50) 5½" × 8¾".

The book is a clearly written volume for a ready understanding of the causes, action, and methods employed for combatting infectious disease.

The text consists of five parts divided into twenty chapters. Part I considers the Biological Causes and Evolution of Disease and its Defense; Part II, a Description of the Aggressors; Part III, the Processes of Defense; Part IV, the Natural History of Infectious Disease; and Part V, Some Important Infectious Diseases.

An ecological approach is maintained throughout the text, studying the interactions between the parasite and the host. It is written from the outlook of a biologist, to whom both man and microorganism are of equal interest.

Physicians and public health administrators will find the book of extreme interest, especially concerning the occurrence of these diseases in Australia. Biologists, biochemists, microbiologists, parasitologists, and pathologists (both plant and animal) will find the book valuable as a survey of infectious diseases interlinked with their fields of research.

BERNARD WITLIN

Kinesiology. By Lawrence E. Morehouse and John M. Cooper. 445 pages; C. V. Mosby Co., St. Louis, 1950. Price $4.50.

This is a well written textbook applicable to Physical Education Students, Physical Therapists, or anyone interested in a moderately thorough knowledge of the subject of Kinesiology. It presupposes certain a priori knowledge in the fields of physiology and physics, but covers the anatomical subjects well. The illustrations are clear and to the point although some of them are so simple that they hardly need be included. The analysis of motion in various athletic maneuvers is interesting, instructive and carefully analyzed. This is particularly true of the gait patterns.

As a reference book it could be a useful and valuable addition to a science library.

J. I. FEINMAN, M. D.

The Bile Pigments. By C. H. Gray. John Wiley & Sons, Inc., New York, 1953. 142 pp. ($1.75) 4¼" ×6¾".

This is a new addition to the Methuen's Monographs on Biochemical Subjects. The Preface discusses the question of classification of methane and methyne groups and the author's reason for conforming with Fischer's terminology of "substituted methanes" and "substituted methenes". The Introduction consists of a short history of bile pigments.

There are twelve chapters contained in the text which consider bile pigments as to their chemical structure, reactions, absorption spectra, catabolism, jaundice mechanism, urobilin and stercobilin precursors, changes in the alimentary tract, transport in the blood, biosynthesis, dippyrrl components, quantitative measurements, and problems.

There are three appendices of laboratory procedure for bile pigments: A. Preparation; B. Qualitative Tests; and C. Determination.

The book is one for which there has long been a need and is a useful and brief account of the bile pigments in relation to man which should interest the pharmacist, pharmacologist, biochemist, and physician.

BERNARD WITLIN

The Extra Pharmacopoeia (Martindale) Vol. I, 23rd. Edition Pp. xxii + 1352. The Pharmaceutical Press, 17 Bloomsbury Sq., London, W. C. 1. Price 55s.

Those who have learned to respect and use *The Extra Pharmacopoeia* over the years, as has this reviewer, will welcome this new edition. Those not familiar with it should give it a high priority on their purchase list for a pharmaceutical library.

The Extra Pharmacopoeia might best be described as a dispensatory and it compares favorably in its scope and contents with that American classic *The United States Dispensatory.* The fact is that this reviewer keeps them side by side since together they encompass an unbelievable amount of data of interest to both pharmacists and physicians.

The new twenty-third edition has been enlarged in its size and completely revised. The type and format are still small but this is

necessary to keep the book of "pocket" size. Over 4000 literature references are given in the text, a valuable asset when used for reference purposes. The alphabetical arrangement by drug names is still used and for pharmacists at least this is the best system. Some drug groups such as the antihistamines are listed together following some one important member, in this case Mepyramine Maleate. This seems reasonable since it saves repeating much data common to all members. Latin names are used as the primary titles throughout. Some little material of interest only to British readers (such as legislation) is included but this occupies little over-all space.

The book is very well indexed which is a prime essential in a work of this type and the over-all excellence long a characteristic has been maintained.

This reviewer would place *The Extra Pharmacopoeia* among the ten most valuable references in pharmacy written in English the world over.

L. F. Tice

Essentials of Pharmacology. By F. K. Oldham, F. E. Kelsey, and E. M. K. Geiling. J. B. Lippincott Company, East Washington Square, Phila., Pa., 1951; Second Edition. XVI + 462 pp. Price $5.00.

This brief textbook of pharmacology appears to be highly useful for students of pharmacy and medicine. Most textbooks discuss in much detail controversies over the issues under consideration, the historical development of present concepts, and also attempt to familiarize the reader with the main trends in research. All of these are omitted in this book.

In modern education, it is a frequently occurring phenomenon that it is recommended to students that they use voluminous textbooks; yet, the students actually study from scanty notes—often full of errors—handed down by fraternities. *Essentials of Pharmacology* seems to be suitable to remove such discrepancies since the material covered is entirely within the range of the time available in the average pharmacology course. The presentation is exceptionally clear, logical, and well-balanced. The main advances made in the field since the first edition have been incorporated.

J. L. Ambrus

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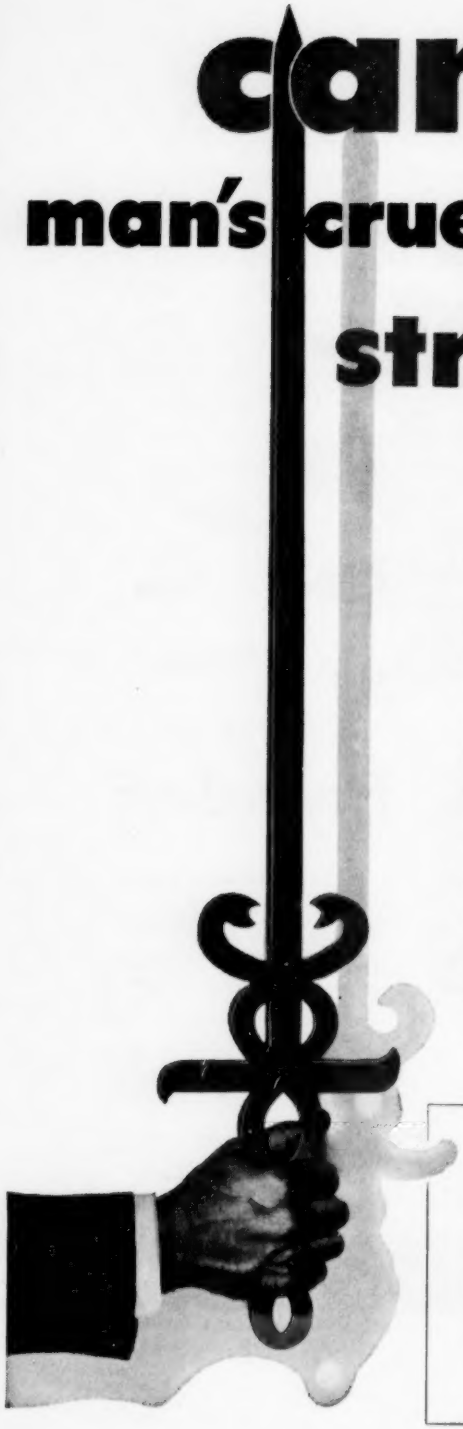

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